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Yang, Shumin
Dreitz, Matthew J.
Wonderling, Ramani S.

<120> CANINE AND FELINE IMMUNOREGULATORY PROTEINS, NUCLEIC ACID MOLECULES, AND USES THEREOF

<130> IM-2-C2

<140> not yet assigned

<141> 1999-12-01

<150> 09/322,409

<151> 1999-05-28

<150> 60/087,306

<151> 1998-05-29

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Met Leu Asn Ile Leu Thr Ala Arg Asn Asp Ser Cys Met Glu Leu Thr 40 45 gtc aag gac gtc ttc act gct cca aag aac aca agc gat aag gaa atc 246 Val Lys Asp Val Phe Thr Ala Pro Lys Asn Thr Ser Asp Lys Glu Ile 60 ttc tgc aga gct gct act gta ctg cgg cag atc tat aca cac aac tgc 294 Phe Cys Arg Ala Ala Thr Val Leu Arg Gln Ile Tyr Thr His Asn Cys 70 75 tcc aac aga tat ctc aga gga ctc tac agg aac ctc agc agc atg gca

342 Ser Asn Arg Tyr Leu Arg Gly Leu Tyr Arg Asn Leu Ser Ser Met Ala 85 90 95 100

aac aag acc tgt tct atg aat gaa atc aag aag agt aca ctg aaa gac Asn Lys Thr Cys Ser Met Asn Glu Ile Lys Lys Ser Thr Leu Lys Asp 105 110

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Met Glu Leu Thr Val Lys Asp Val Phe Thr Ala Pro Lys Asn Thr Ser 50 55

Asp Lys Glu Ile Phe Cys Arg Ala Ala Thr Val Leu Arg Gln Ile Tyr 65 70 75 80 Thr His Asn Cys Ser Asn Arg Tyr Leu Arg Gly Leu Tyr Arg Asn Leu 85 90 95

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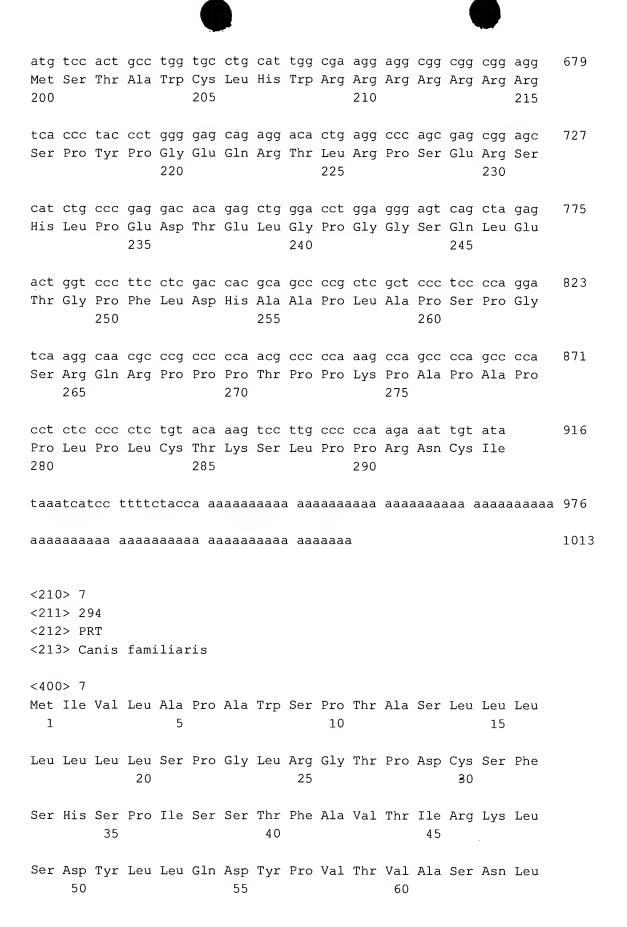
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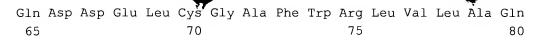
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Phe Gln Pro Leu Pro Ser Cys Leu Arg Phe Val Gln Thr Asn Ile Ser 115 120 125

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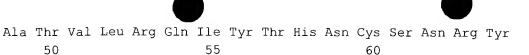
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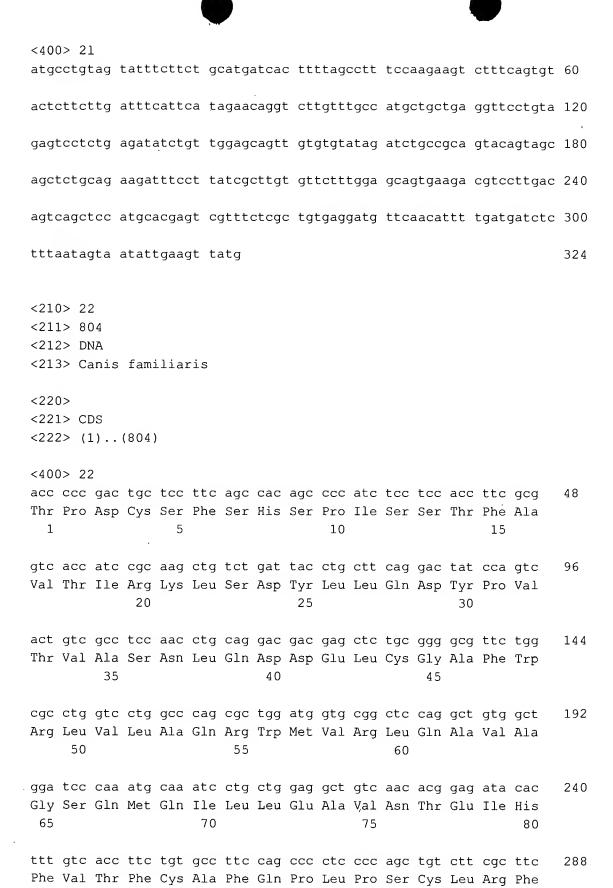
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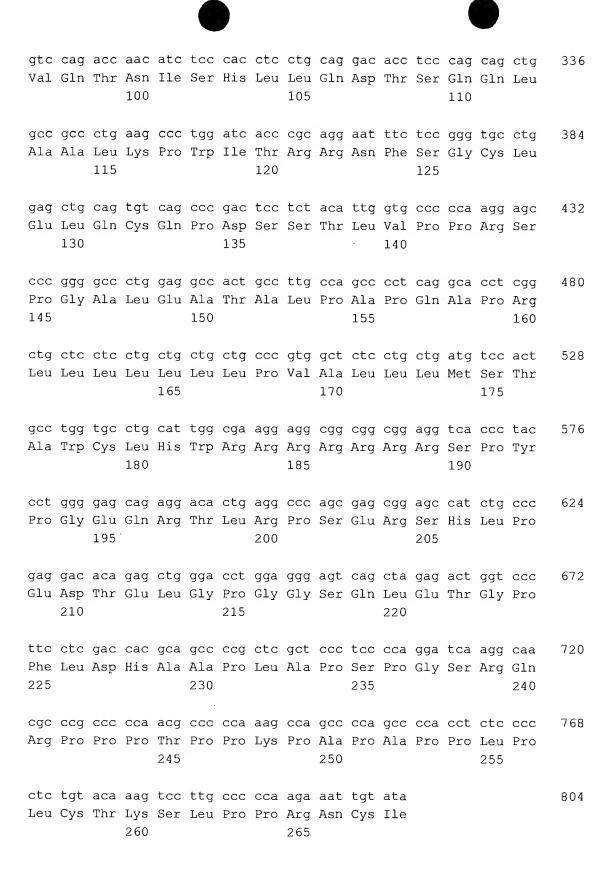
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Phe Val Thr Phe Cys Ala Phe Gln Pro Leu Pro Ser Cys Leu Arg Phe 85 90 95

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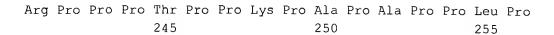
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gag gcc act gcc ttg cca gcc cct cag gca cct cgg ctg ctc ctc ctg



Ser Asp Tyr Leu Leu Gln Asp Tyr Pro Val Thr Val Ala Ser Asn Leu 55 Gln Asp Asp Glu Leu Cys Gly Ala Phe Trp Arg Leu Val Leu Ala Gln 75 Arg Trp Met Val Arg Leu Gln Ala Val Ala Gly Ser Gln Met Gln Ile 85 Leu Leu Glu Ala Val Asn Thr Glu Ile His Phe Val Thr Phe Cys Ala 105 Phe Gln Asp Thr Ser Gln Gln Leu Ala Ala Leu Lys Pro Trp Ile Thr 115 120 Arg Arg Asn Phe Ser Gly Cys Leu Glu Leu Gln Cys Gln Pro Asp Ser 130 135 Ser Thr Leu Val Pro Pro Arg Ser Pro Gly Ala Leu Glu Ala Thr Ala 145 150 155 160 Leu Pro Ala Pro Gln Ala Pro Arg Leu Leu Leu Leu Leu Leu Pro 165 170 175 Val Ala Leu Leu Met Ser Thr Ala Trp Cys Leu His Trp Arg Arg 180 185 Arg Arg Arg Arg Ser Pro Tyr Pro Gly Glu Gln Arg Thr Leu Arg 195 200 205 Pro Ser Glu Arg Ser His Leu Pro Glu Asp Thr Glu Leu Gly Pro Gly 210 215 220 Gly Ser Gln Leu Glu Thr Gly Pro Phe Leu Asp His Ala Ala Pro Leu 225 230 235 240 Ala Pro Ser Pro Gly Ser Arg Gln Arg Pro Pro Pro Thr Pro Pro Lys 245 250 255

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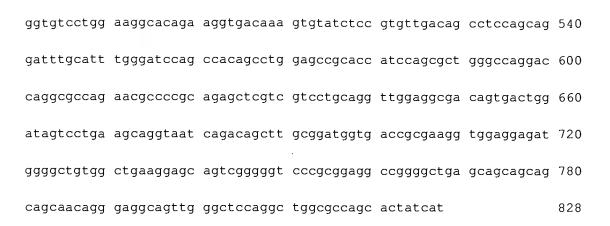
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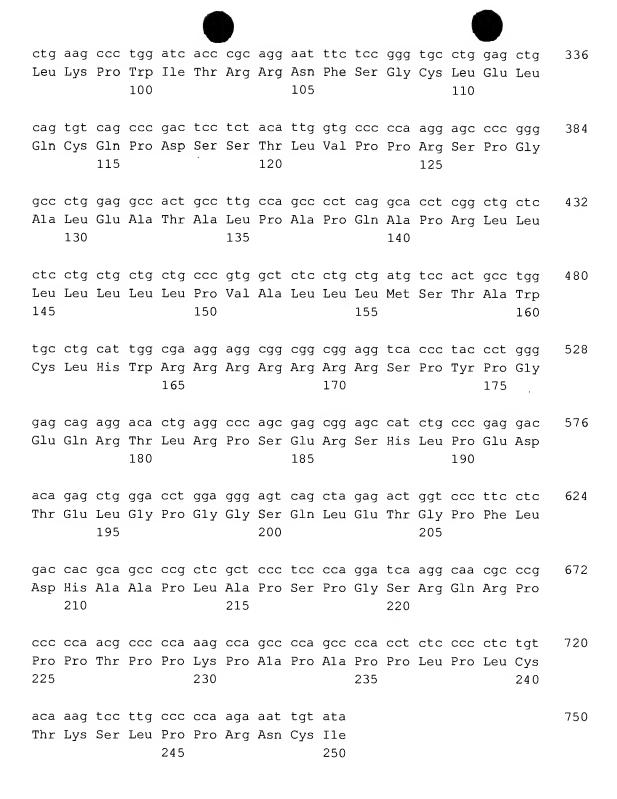
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Thr Val Ala Ser Asn Leu Gln Asp Asp Glu Leu Cys Gly Ala Phe Trp
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<211> 250

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<213> Canis familiaris

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<210> 33

<211> 1019

<212> DNA

<213> Canis familiaris

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<222> (74)..(166)

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190

cgt ata ccc ggg gga caa ggc ggg gga cag gca gag cgc tac cga gct 157 Arg Ile Pro Gly Gly Gln Gly Gly Gln Ala Glu Arg Tyr Arg Ala 15 20 25

ggg cag agc tgagagagca gacggacaga ggcctccctg ttgctgctgc 206 Gly Gln Ser

tgctgctcag coccggctc cgcgggaccc ccgactgctc cttcagccac agccccatct 266

cctccacctt cgcggtcacc atccgcaagc tgtctgatta cctgcttcag gactatccag 326

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<210> 34

<211> 31

<212> PRT

<213> Canis familiaris

<400> 34

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<213> Canis familiaris

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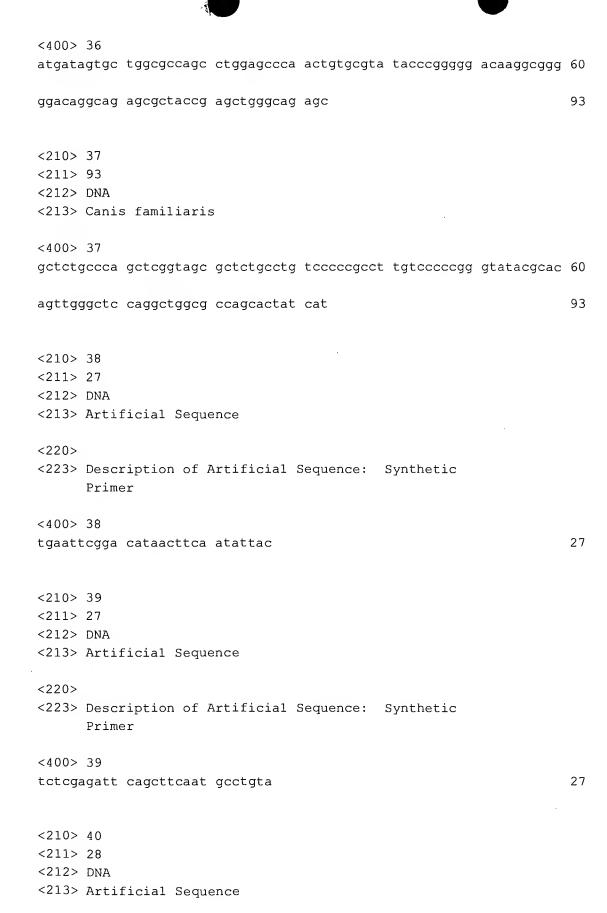
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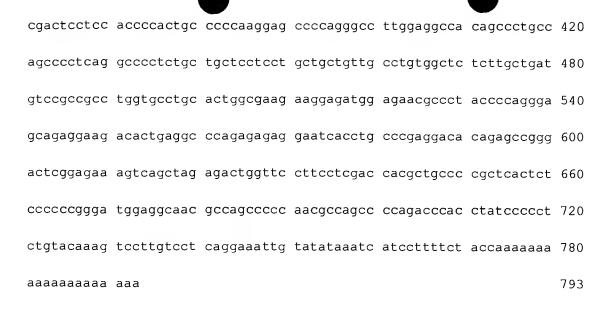


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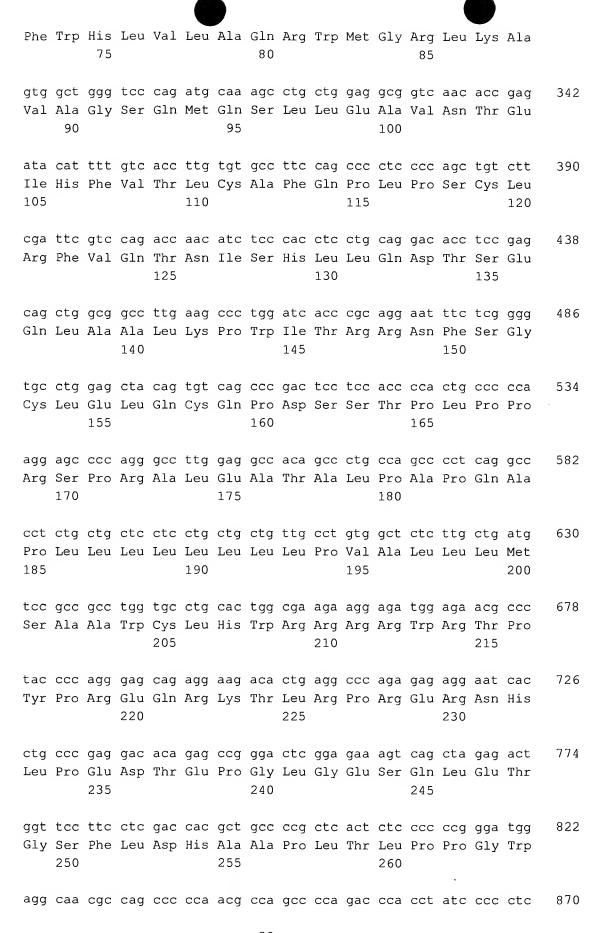
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Phe Lys Val Thr Ile Arg Lys Leu Ser Asp Tyr Leu Leu Gln Asp Tyr
45 50 55

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Pro Val Thr Val Ala Ser Asn Leu Gln Asp Asp Glu Leu Cys Gly Pro
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ttc tgg cac ctg gtc ctg gcc cag cgc tgg atg ggt cgg ctc aag gct 294









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<400> 44

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Ser Asp Tyr Leu Leu Gln Asp Tyr Pro Val Thr Val Ala Ser Asn Leu 50 55 60

Gln Asp Asp Glu Leu Cys Gly Pro Phe Trp His Leu Val Leu Ala Gln 65 70 75 80

Arg Trp Met Gly Arg Leu Lys Ala Val Ala Gly Ser Gln Met Gln Ser 85 90 95

Leu Leu Glu Ala Val Asn Thr Glu Ile His Phe Val Thr Leu Cys Ala 100 105 110

Phe Gln Pro Leu Pro Ser Cys Leu Arg Phe Val Gln Thr Asn Ile Ser 115 120 125

His Leu Leu Gln Asp Thr Ser Glu Gln Leu Ala Ala Leu Lys Pro Trp 130 135 140

Ile Thr Arg Arg Asn Phe Ser Gly Cys Leu Glu Leu Gln Cys Gln Pro 145 150 155 160

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Thr Ala Leu Pro Ala Pro Gln Ala Pro Leu Leu Leu Leu Leu Leu 180 185 190

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195 200 205

Arg Arg Arg Trp Arg Thr Pro Tyr Pro Arg Glu Gln Arg Lys Thr 210 215 220

Leu Arg Pro Arg Glu Arg Asn His Leu Pro Glu Asp Thr Glu Pro Gly 225 230 235 240

Leu Gly Glu Ser Gln Leu Glu Thr Gly Ser Phe Leu Asp His Ala Ala 245 250 255

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<211> 942

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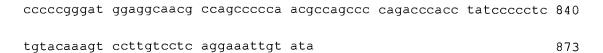
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<213> Felis catus

<400> 46

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<211> 873

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<213> Felis catus

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<213> Felis catus



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		cag Gln 195		_					-	-				_		624
		aca Thr										-				672
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85 90 95

Val Gln Thr Asn Ile Ser His Leu Leu Gln Asp Thr Ser Glu Gln Leu 100 105 110

Ala Ala Leu Lys Pro Trp Ile Thr Arg Arg Asn Phe Ser Gly Cys Leu 115 120 125

Glu Leu Gln Cys Gln Pro Asp Ser Ser Thr Pro Leu Pro Pro Arg Ser 130 135 140

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Ala Trp Cys Leu His Trp Arg Arg Arg Trp Arg Thr Pro Tyr Pro 180 185 190

Arg Glu Gln Arg Lys Thr Leu Arg Pro Arg Glu Arg Asn His Leu Pro 195 200 205

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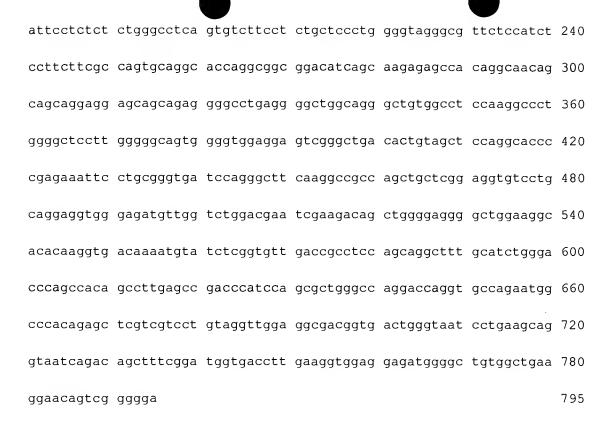
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<210> 51

<211> 321

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663

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Thr Ile Cys Asp Pro Cys Pro Ile Gly Phe Phe Ser Asn Val Ser Ser

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<211> 274

<212> PRT

<213> Canis familiaris

<400> 53

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Asn Asp Cys Leu His Thr Ile Asp Thr Glu Cys Thr Arg Cys Gln Thr 50 55 60

Gly Glu Phe Leu Asp Thr Trp Asn Ala Glu Arg His Cys His Gln His
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Lys Tyr Cys Asp Pro Asn Leu Gly Leu His Val Glu Lys Glu Gly Thr
85 90 95

Ser Glu Thr Asp Thr Thr Cys Thr Cys Asp Glu Gly Leu His Cys Thr
100 105 110

Asn Ala Ala Cys Glu Ser Cys Thr Met His Ser Leu Cys Pro Pro Gly
115 120 125

Leu Gly Val Lys Gln Ile Ala Thr Gly Ile Ser Asp Thr Ile Cys Asp 130 135 140

Pro Cys Pro Ile Gly Phe Phe Ser Asn Val Ser Ser Ala Leu Glu Lys 145 150 155 160

Cys His Pro Trp Thr Ser Cys Glu Thr Lys Gly Leu Val Lys Val Gln
165 170 175

Ala Gly Thr Asn Lys Thr Asp Val Ile Cys Gly Pro Gln Pro Arg Leu 180 185 190

Arg Ala Leu Val Val Pro Ile Ile Met Gly Ile Leu Leu Val Val 195 200 205

Leu Leu Val Ser Ala Cys Ile Arg Lys Val Val Lys Lys Pro Glu Asn 210 215 220

213

Lys Val Met Tyr Gln Asp Pro Val Glu Asp Leu Glu Glu Phe Pro Met 225 230 235 240

Pro Pro His Ser Ile Ala Pro Val Gln Glu Thr Leu His Gly Cys Gln
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<211> 1425

<212> DNA

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<213> Canis familiaris

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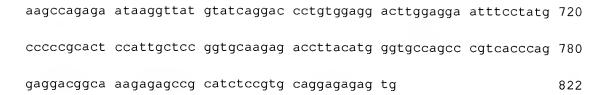
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<211> 822

<212> DNA

<213> Canis familiaris

<400> 56

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<210> 57

<211> 765

<212> DNA

<213> Canis familiaris

216

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		tgc Cys 195					_	_					_	624
tat Tyr		gac Asp												672
		gct Ala	_						 _	_		_		720
_		.gac Asp			_	_			 _		_			765
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<400> 58

<213> Canis familiaris

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35 40 45

Leu Asp Thr Trp Asn Ala Glu Arg His Cys His Gln His Lys Tyr Cys
50 55 60

Asp Pro Asn Leu Gly Leu His Val Glu Lys Glu Gly Thr Ser Glu Thr 65 70 75 80

Asp Thr Thr Cys Thr Cys Asp Glu Gly Leu His Cys Thr Asn Ala Ala 85 90 95

Cys Glu Ser Cys Thr Met His Ser Leu Cys Pro Pro Gly Leu Gly Val 100 105 110



Lys Gln Ile Ala Thr Gly Ile Ser Asp Thr Ile Cys Asp Pro Cys Pro 115 120 125

Ile Gly Phe Phe Ser Asn Val Ser Ser Ala Leu Glu Lys Cys His Pro 130 135 140

Trp Thr Ser Cys Glu Thr Lys Gly Leu Val Lys Val Gln Ala Gly Thr 145 150 155 160

Asn Lys Thr Asp Val Ile Cys Gly Pro Gln Pro Arg Leu Arg Ala Leu 165 170 175

Val Val Pro Ile Ile Met Gly Ile Leu Leu Val Val Leu Leu Val
180 185 190

Ser Ala Cys Ile Arg Lys Val Val Lys Lys Pro Glu Asn Lys Val Met 195 200 205

Tyr Gln Asp Pro Val Glu Asp Leu Glu Glu Phe Pro Met Pro Pro His 210 215 220

Ser Ile Ala Pro Val Gln Glu Thr Leu His Gly Cys Gln Pro Val Thr 225 230 235 240

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<211> 765

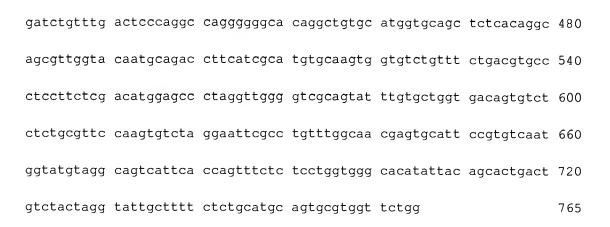
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<213> Canis familiaris

<400> 59

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<220> <221> CDS <222> (1)..(336)

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Thr Lys Gly Leu Val Glu Leu Gln Ala Gly Thr Asn Lys Thr Asp Ala
20 25 30

gtc tgc ggt ttc cag gat cgg ata aga gcc ctg gtg gtg atc ccc atc 144 Val Cys Gly Phe Gln Asp Arg Ile Arg Ala Leu Val Val Ile Pro Ile 35 40 45

acg atg gtg gtc ctg ctt gct gtc ttg ttg gtg tct gcg tat atc aga 192 Thr Met Val Val Leu Leu Ala Val Leu Leu Val Ser Ala Tyr Ile Arg 50 55 60

aag gtg acc aag aag cca gag aat aag gtc ctc cag cct aag gct gtg 240 Lys Val Thr Lys Lys Pro Glu Asn Lys Val Leu Gln Pro Lys Ala Val 65 70 75 80

tcg cag gac cct gtg gag gac ttg gag gtc ctt cct gtc ccc ctc cac 288
Ser Gln Asp Pro Val Glu Asp Leu Glu Val Leu Pro Val Pro Leu His
85 90 95

220

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<210> 61

<211> 112

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<213> Felis catus

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Val Cys Gly Phe Gln Asp Arg Ile Arg Ala Leu Val Val Ile Pro Ile 35 40 45

Thr Met Val Val Leu Leu Ala Val Leu Leu Val Ser Ala Tyr Ile Arg
50 55 60

Lys Val Thr Lys Lys Pro Glu Asn Lys Val Leu Gln Pro Lys Ala Val 65 70 75 80

Ser Gln Asp Pro Val Glu Asp Leu Glu Val Leu Pro Val Pro Leu His
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Pro Ile Ala Pro Val Gln Glu Thr Leu His Gly Cys Gln Pro Val Thr
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<210> 62

<211> 336

<212> DNA

<213> Felis catus

<400> 62

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<212> DNA
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<213> Canis familiaris

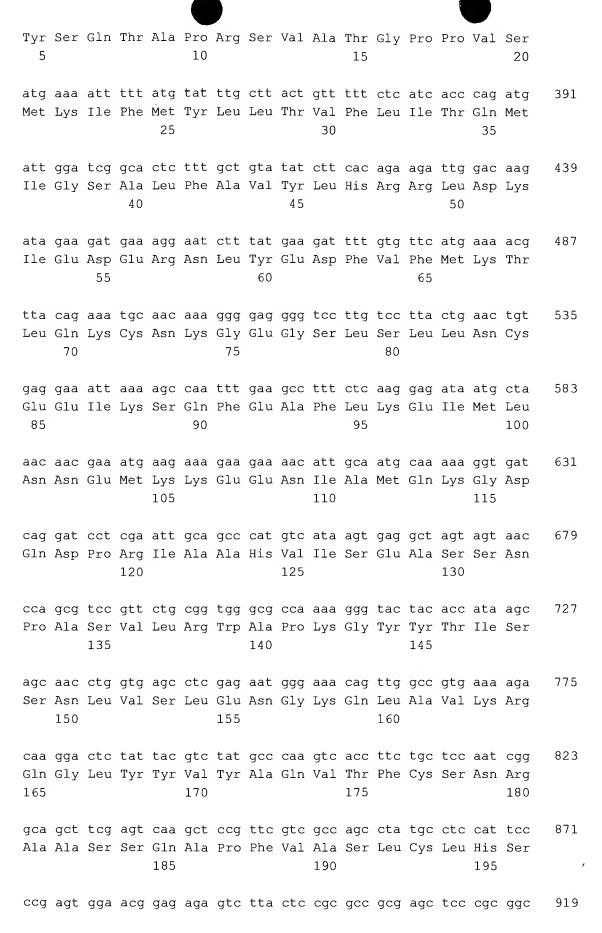
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<210> 65

<211> 260

<212> PRT

<213> Canis familiaris



<400> 65

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Ile Thr Gln Met Ile Gly Ser Ala Leu Phe Ala Val Tyr Leu His Arg
35 40 45

Arg Leu Asp Lys Ile Glu Asp Glu Arg Asn Leu Tyr Glu Asp Phe Val 50 55 60

Phe Met Lys Thr Leu Gln Lys Cys Asn Lys Gly Glu Gly Ser Leu Ser 65 70 75 80

Leu Leu Asn Cys Glu Glu Ile Lys Ser Gln Phe Glu Ala Phe Leu Lys
85 90 95

Glu Ile Met Leu Asn Asn Glu Met Lys Lys Glu Glu Asn Ile Ala Met 100 \$105\$

Gln Lys Gly Asp Gln Asp Pro Arg Ile Ala Ala His Val Ile Ser Glu 115 120 125

Ala Ser Ser Asn Pro Ala Ser Val Leu Arg Trp Ala Pro Lys Gly Tyr 130 135 140

Ala Val Lys Arg Gln Gly Leu Tyr Tyr Val Tyr Ala Gln Val Thr Phe 165 170 175

Cys Ser Asn Arg Ala Ala Ser Ser Gln Ala Pro Phe Val Ala Ser Leu 180 185 190

Cys Leu His Ser Pro Ser Gly Thr Glu Arg Val Leu Leu Arg Ala Ala 195 200 205

Ser Ser Arg Gly Ser Ser Lys Pro Cys Gly Gln Gln Ser Ile His Leu 210 215 220

Gly Gly Val Phe Glu Leu His Pro Gly Ala Ser Val Phe Val Asn Val 225 230 235 240

Thr Asp Pro Ser Gln Val Ser His Gly Thr Gly Phe Thr Ser Phe Gly



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Leu Leu Lys Leu 260

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<211> 1878

<212> DNA

<213> Canis familiaris

<400> 66

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<210> 67

<211> 780

<212> DNA

<213> Canis familiaris

<400> 67

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<212> DNA

<213> Canis familiaris

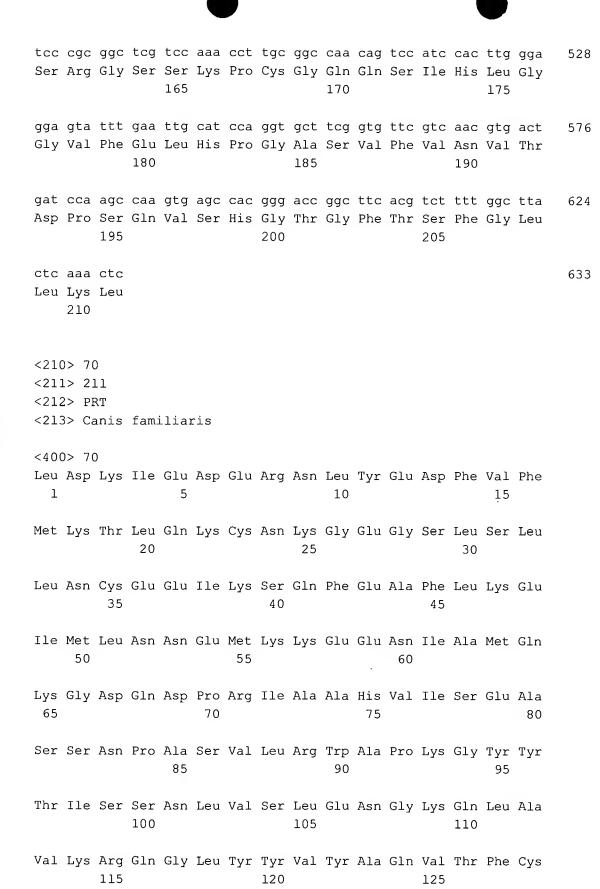
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Ser Asn Arg Ala Ala Ser Ser Gln Ala Pro Phe Val Ala Ser Leu Cys 130 135 140

Leu His Ser Pro Ser Gly Thr Glu Arg Val Leu Leu Arg Ala Ala Ser 145 150 155 160

Ser Arg Gly Ser Ser Lys Pro Cys Gly Gln Gln Ser Ile His Leu Gly
165 170 175

Gly Val Phe Glu Leu His Pro Gly Ala Ser Val Phe Val Asn Val Thr 180 185 190

Asp Pro Ser Gln Val Ser His Gly Thr Gly Phe Thr Ser Phe Gly Leu 195 200 205

Leu Lys Leu 210

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<212> DNA

<213> Canis familiaris

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140 145 150

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		tac Tyr											_	_	_	580
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		gtc Val														676
_		cag Gln					_			-		_	_			724
	_	tcg Ser 235							_	_				_		772
	_	ggc Gly		_				_				tgaa	acact	gg		818
caco	ctcgc	cag g	gccgc	gagg	gc ct	gcag	ggcc	a caā	gctga	igct	caco	gctgg	gga g	gtctt	cacaa	878
taca	igca															885
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<210> 73

<211> 260

<212> PRT

<213> Felis catus

<400> 73

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Pro Pro Val Ser Met Lys Ile Phe Met Tyr Leu Leu Thr Val Phe Leu 20 25 30

Ile Thr Gln Met Ile Gly Ser Ala Leu Phe Ala Val Tyr Leu His Arg



ű

35 40 45

Arg Leu Asp Lys Ile Glu Asp Glu Arg Asn Leu Tyr Glu Asp Phe Val 50 55 . 60

Phe Met Lys Thr Leu Gln Lys Cys Asn Lys Gly Glu Gly Ala Leu Ser 65 70 75 80

Leu Leu Asn Cys Glu Glu Ile Lys Ser Arg Phe Glu Ala Phe Leu Lys
85 90 95

Glu Ile Met Leu Asn Lys Glu Thr Lys Lys Glu Lys Asn Val Ala Met 100 105 110

Gln Lys Gly Asp Gln Asp Pro Arg Val Ala Ala His Val Ile Ser Glu 115 120 125

Ala Ser Ser Ser Thr Ala Ser Val Leu Gln Trp Ala Pro Lys Gly Tyr 130 135 140

Tyr Thr Ile Ser Ser Asn Leu Val Thr Leu Glu Asn Gly Lys Gln Leu 145 150 155 160

Ala Val Lys Arg Gln Gly Leu Tyr Tyr Ile Tyr Ala Gln Val Thr Phe 165 170 175

Cys Ser Asn Arg Glu Ala Ser Ser Gln Ala Pro Phe Ile Ala Ser Leu 180 185 190

Cys Leu His Ser Pro Ser Gly Ser Glu Arg Val Leu Leu Arg Ala Ala 195 200 205

Asn Ala Arg Ser Ser Ser Lys Pro Cys Gly Gln Gln Ser Ile His Leu 210 215 220

Gly Gly Val Phe Glu Leu His Pro Gly Ala Ser Val Phe Val Asn Val 225 230 235 240

Thr Asp Pro Ser Gln Val Ser His Gly Thr Gly Phe Thr Ser Phe Gly 245 250 255

Leu Leu Lys Leu

260

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<212> DNA

<213> Felis catus

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aacaaagaaa cgaagaaaga aaaaatgtt gcaatgcaaa aaggcgacca ggatcctcga 360
gttgcagcac atgtcataag tgaggccagc agtagcacag cgtctgttct ccagtgggcc 420
cccaaaggct actacaccat aagcagcaac ttggtgaccc tcgagaacgg gaagcagctg 480
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gagagaggtct tactcagagc tgcaaatgcc cgcagttcct ccaaaccctg tgggcagcaa 660
tccattcact tgggaggagt cttcgaactg catccaggtg cttcggtgtt cgtgaacgtg 720
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<211> 780

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	g aaa Lys			-	_						-				96
_	g aac 1 Asn	-		-		-			-	-			-		144
	a atg e Met 50														192
	ggc Gly									_		_		_	240
	agt Ser								_						288
	ata Ile	_	_								_	_	-	-	336
	aaa Lys								-		-			-	384
	aat Asn						_	_			-	-		-	432



130 135 140

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	aaa Lys 210															633
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Leu 1	Asp	ьys	ile	5	Asp	Glu	Arg	ASN	10	Tyr	GIU	Asp	Pne	15	Pne	
Met	Lys	Thr	Leu 20	Gln	Lys	Cys	Asn	Lys 25	Gly	Glu	Gly	Ala	Leu 30	Ser	Leu	
Leu	Asn	Cys 35	Glu	Glu	Ile	Lys	Ser 40	Arg	Phe	Glu	Ala	Phe 45	Leu	Lys	Glu	
Ile	Met 50	Leu	Asn	Lys	Glu	Thr 55	Lys	Lys	Glu	Lys	Asn 60	Val	Ala	Met	Gln	
Lys 65	Gly	Asp	Gln	Asp	Pro 70	Arg	Val	Ala	Ala	His 75	Val	Ile	Ser	Glu	Ala 80	
Ser	Ser	Ser	Thr	Ala 85	Ser	Val	Leu	Gln	Trp 90	Ala	Pro	Lys	Gly	Tyr 95	Tyr	
Thr	Ile	Ser	Ser	Asn	Leu	Val	Thr	Leu	Glu	Asn	Gly	Lys	Gln	Leu	Ala	



100 105 110

Val Lys Arg Gln Gly Leu Tyr Tyr Ile Tyr Ala Gln Val Thr Phe Cys 115 120 125

Ser Asn Arg Glu Ala Ser Ser Gln Ala Pro Phe Ile Ala Ser Leu Cys 130 135 140

Ala Arg Ser Ser Lys Pro Cys Gly Gln Gln Ser Ile His Leu Gly 165 170 175

Gly Val Phe Glu Leu His Pro Gly Ala Ser Val Phe Val Asn Val Thr 180 185 190

Asp Pro Ser Gln Val Ser His Gly Thr Gly Phe Thr Ser Phe Gly Leu 195 200 205

Leu Lys Leu 210

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<211> 633

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					_											
													(
ggat	aagg	jcc (ccct	ctcct	t to	gttgo	cattt	cto	gtaat	gtt	ttca	atgaa	aca	caaaa	atcttc	600
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						-				_		_		Leu S	_	
								1				5				
tta	cta	act	ctt	aaa	act	acc	tat	att	tct	acc	ttt	act	σta	gaa	aat	100
_		_			_	_		_		_		_	_	Glu		
	10					15					20					
	2+~	224	202	at a	a+ a	~~~	~~~	200	++~	202	ata	ata	taa	act	ant	148
	_		_	_		_			_		_			Thr		140
25					30					35					40	
_			_			-			-	_				cct	-	196
Arg	Thr	Trp	Leu	11e 45	СТА	Asp	GTÀ	Asn	ьеи 50	мет	тте	Pro	Thr	Pro 55	GIU	
				15					30					33		
aat	aaa	aat	cac	caa	ctg	tgc	att	aaa	gaa	gtt	ttt	cag	ggt	ata	gac	244

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Arg Thr Trp Leu Ile Gly Asp Gly Asn Leu Met Ile Pro Thr Pro Glu
45 50 55

aat aaa aat cac caa ctg tgc att aaa gaa gtt ttt cag ggt ata gac 244

Asn Lys Asn His Gln Leu Cys Ile Lys Glu Val Phe Gln Gly Ile Asp
60 65 70

aca ttg aag aac caa act gcc cac ggg gag gct gtg gat aaa cta ttc 292

Thr Leu Lys Asn Gln Thr Ala His Gly Glu Ala Val Asp Lys Leu Phe
75 80 85

caa aac ttg tct tta ata aaa gaa cac ata gag cgc caa aaa aaa agg 340

Gln Asn Leu Ser Leu Ile Lys Glu His Ile Glu Arg Gln Lys Lys Arg
90 95 100

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gta ttt ctt ggt gta ata aac acc gag tgg aca ccg gaa agt 430



Val Phe Leu Gly Val Ile Asn Thr Glu Trp Thr Pro Glu Ser 125 130

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<211> 134

<212> PRT

<213> Canis familiaris

<400> 81

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Thr Leu Thr Leu Leu Ser Thr His Arg Thr Trp Leu Ile Gly Asp Gly 35 40 45

Asn Leu Met Ile Pro Thr Pro Glu Asn Lys Asn His Gln Leu Cys Ile 50 55 60

Lys Glu Val Phe Gln Gly Ile Asp Thr Leu Lys Asn Gln Thr Ala His 65 70 75 80

Gly Glu Ala Val Asp Lys Leu Phe Gln Asn Leu Ser Leu Ile Lys Glu 85 90 95

His Ile Glu Arg Gln Lys Lys Arg Cys Ala Gly Glu Arg Trp Arg Val 100 105 110

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Glu Trp Thr Pro Glu Ser 130

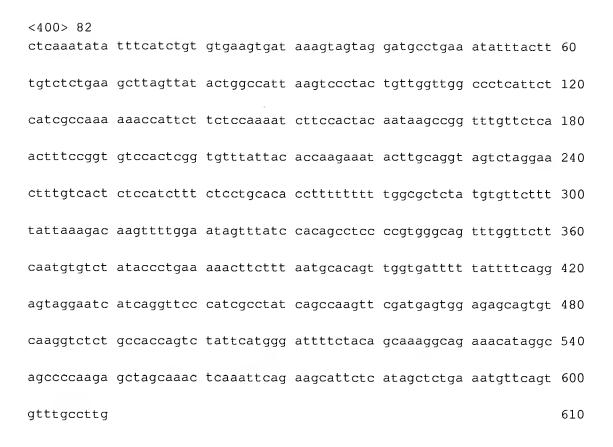
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241



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242

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<220>

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ctg ctc tcc act cat cga act tgg ctg ata ggc gat ggg aac ctg atg $\,\,$ 96 Leu Leu Ser Thr His Arg Thr Trp Leu Ile Gly Asp Gly Asn Leu Met $\,\,$ 20 $\,\,$ 25 $\,\,$ 30

att cct act cct gaa aat aaa aat cac caa ctg tgc att aaa gaa gtt 144
Ile Pro Thr Pro Glu Asn Lys Asn His Gln Leu Cys Ile Lys Glu Val
35 40 45

ttt cag ggt ata gac aca ttg aag aac caa act gcc cac ggg gag gct 192 Phe Gln Gly Ile Asp Thr Leu Lys Asn Gln Thr Ala His Gly Glu Ala 50 55 60

gtg gat aaa cta ttc caa aac ttg tct tta ata aaa gaa cac ata gag 240 Val Asp Lys Leu Phe Gln Asn Leu Ser Leu Ile Lys Glu His Ile Glu 65 70 75 80

cgc caa aaa aaa agg tgt gca gga gaa aga tgg aga gtg aca aag ttc 288
Arg Gln Lys Lys Arg Cys Ala Gly Glu Arg Trp Arg Val Thr Lys Phe 85 90 95

cta gac tac ctg caa gta ttt ctt ggt gta ata aac acc gag tgg aca 336
Leu Asp Tyr Leu Gln Val Phe Leu Gly Val Ile Asn Thr Glu Trp Thr 100 105 110

ccg gaa agt
Pro Glu Ser
115

<210> 86 <211> 115 <212> PRT <213> Canis familiaris

<400> 86

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20 25 30

Ile Pro Thr Pro Glu Asn Lys Asn His Gln Leu Cys Ile Lys Glu Val
35 40 45

Phe Gln Gly Ile Asp Thr Leu Lys Asn Gln Thr Ala His Gly Glu Ala 50 55 60

Val Asp Lys Leu Phe Gln Asn Leu Ser Leu Ile Lys Glu His Ile Glu 65 70 75 80

Arg Gln Lys Lys Arg Cys Ala Gly Glu Arg Trp Arg Val Thr Lys Phe 85 90 95

Leu Asp Tyr Leu Gl
n Val Phe Leu Gly Val Ile Asn Thr Glu Trp Thr
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Pro Glu Ser 115

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<213> Canis familiaris

<400> 87
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tattaaagac aagttttgga atagtttatc cacagcctcc ccgtgggcag tttggttctt 180
caatgtgtct ataccctgaa aaacttcttt aatgcacagt tggtgattt tatttcagg 240
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<211> 166

<212> DNA

<213> Canis familiaris

<400> 88

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<212> DNA

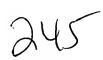
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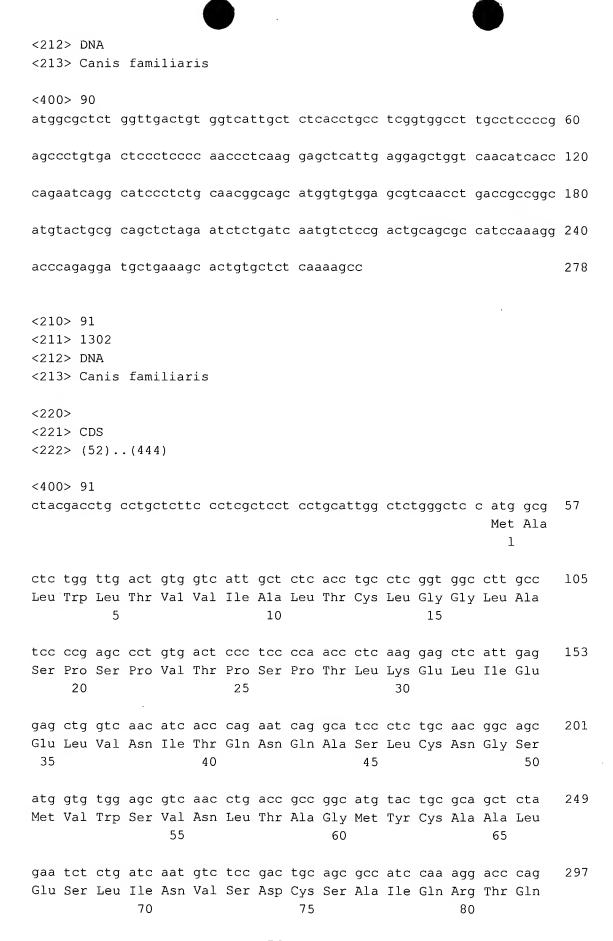
<400> 89

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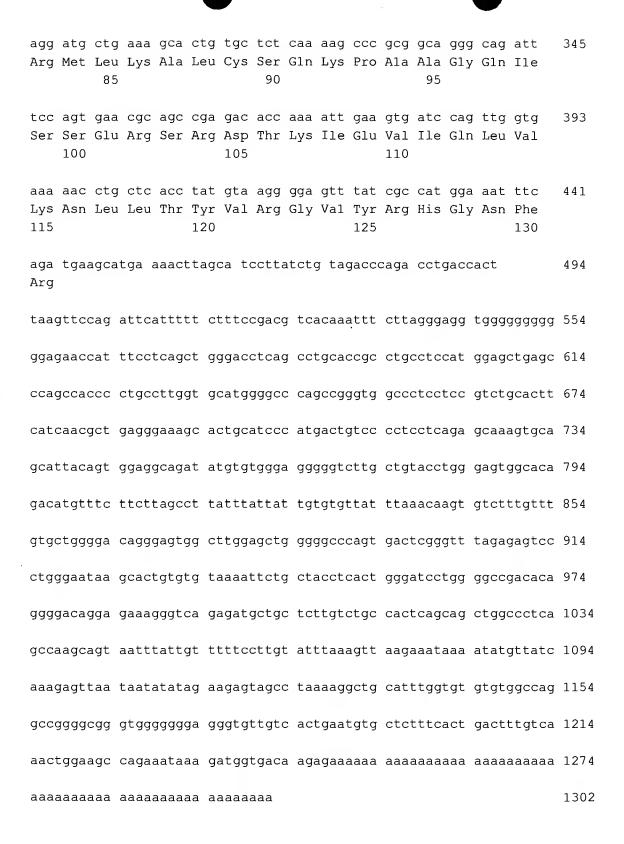
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<211> 278









<211> 131

<212> PRT

<213> Canis familiaris

<400> 92

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Ile Glu Glu Leu Val Asn Ile Thr Gln Asn Gln Ala Ser Leu Cys Asn 35 40 45

Gly Ser Met Val Trp Ser Val Asn Leu Thr Ala Gly Met Tyr Cys Ala 50 55 60

Ala Leu Glu Ser Leu Ile Asn Val Ser Asp Cys Ser Ala Ile Gln Arg
65 70 75 80

Thr Gln Arg Met Leu Lys Ala Leu Cys Ser Gln Lys Pro Ala Ala Gly 85 90 95

Gln Ile Ser Ser Glu Arg Ser Arg Asp Thr Lys Ile Glu Val Ile Gln
100 105 110

Leu Val Lys Asn Leu Leu Thr Tyr Val Arg Gly Val Tyr Arg His Gly
115 120 125

Asn Phe Arg 130

<210> 93

<211> 1302

<212> DNA

<213> Canis familiaris

<400> 93

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<211> 393

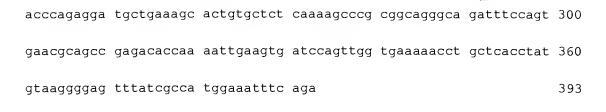
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<211> 393

<212> DNA

<213> Canis familiaris

<400> 95

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<213> Canis familiaris

<220>

<221> CDS

<222> (1)..(333)

<400> 96

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1 5 10 15

gtc aac atc acc cag aat cag gca tcc ctc tgc aac ggc agc atg gtg 96 Val Asn Ile Thr Gln Asn Gln Ala Ser Leu Cys Asn Gly Ser Met Val 20 25 30

tgg agc gtc aac ctg acc gcc ggc atg tac tgc gca gct cta gaa tct 144
Trp Ser Val Asn Leu Thr Ala Gly Met Tyr Cys Ala Ala Leu Glu Ser



35 40 45

			_		-	tgc	_	-					_		_	192
Leu	11e 50	Asn	Val	Ser	Asp	Cys 55	Ser	АТа	IIe	GIN	Arg 60	Thr	GIn	Arg	Met	
	50					55					00					
ctg	aaa	gca	ctg	tgc	tct	caa	aag	ccc	gcg	gca	ggg	cag	att	tcc	agt	240
Leu	Lys	Ala	Leu	Cys	Ser	Gln	Lys	Pro	Ala	Ala	Gly	Gln	Ile	Ser	Ser	
65					70					75					80	
gaa	cgc	agc	cga	gac	acc	aaa	att	gaa	gtg	atc	cag	ttg	gtg	aaa	aac	288
Glu	Arg	Ser	Arg	Asp	Thr	Lys	Ile	Glu	Val	Ile	Gln	Leu	Val	Lys	Asn	
				85					90	٠				95		
ctg	ctc	acc	tat	gta	agg	gga	gtt	tat	cgc	cat	gga	aat	ttc	aga		333
Leu	Leu	Thr	Tyr	Val	Arg	Gly	Val	Tyr	Arg	His	Gly	Asn	Phe	Arg		
			100					105					110			

<210> 97 <211> 111 <212> PRT <213> Canis familiaris

<400> 97

Ser Pro Val Thr Pro Ser Pro Thr Leu Lys Glu Leu Ile Glu Glu Leu 1 5 10 15

Val Asn Ile Thr Gln Asn Gln Ala Ser Leu Cys Asn Gly Ser Met Val 20 25 30

Trp Ser Val Asn Leu Thr Ala Gly Met Tyr Cys Ala Ala Leu Glu Ser 35 40 45

Leu Ile Asn Val Ser Asp Cys Ser Ala Ile Gln Arg Thr Gln Arg Met 50 55 60

Leu Lys Ala Leu Cys Ser Gln Lys Pro Ala Ala Gly Gln Ile Ser Ser 65 70 75 80

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Leu Leu Thr Tyr Val Arg Gly Val Tyr Arg His Gly Asn Phe Arg 100 105 110

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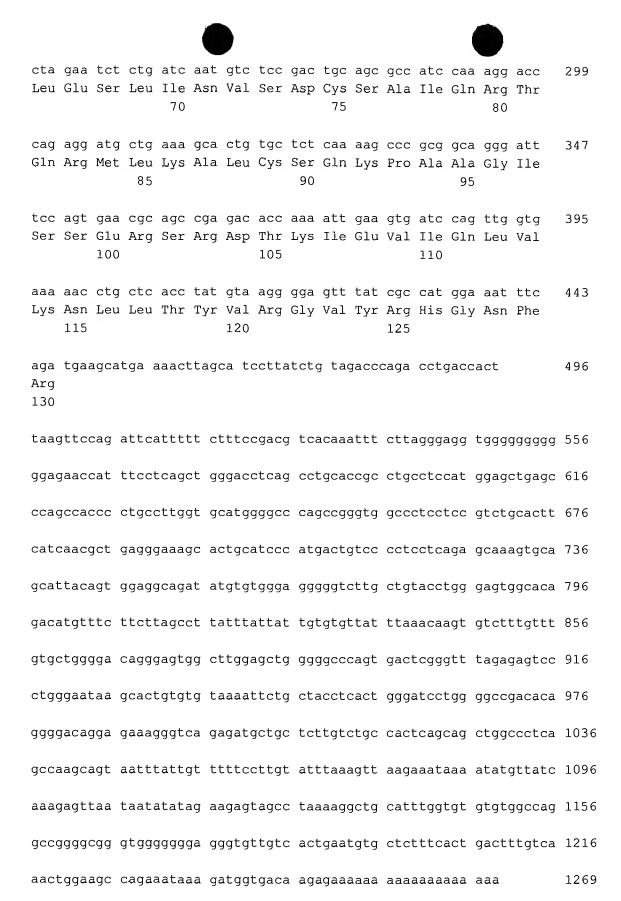


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<211> 130

<212> PRT

<213> Canis familiaris

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Leu Ala Ser Pro Ser Pro Val Thr Pro Ser Pro Thr Leu Lys Glu Leu
20 25 30

Ile Glu Glu Leu Val Asn Ile Thr Gln Asn Gln Ala Ser Leu Cys Asn 35 40 45

Gly Ser Met Val Trp Ser Val Asn Leu Thr Ala Gly Met Tyr Cys Ala 50 55 60

Ala Leu Glu Ser Leu Ile Asn Val Ser Asp Cys Ser Ala Ile Gln Arg 65 70 75 80

Thr Gln Arg Met Leu Lys Ala Leu Cys Ser Gln Lys Pro Ala Ala Gly 85 90 95

Ile Ser Ser Glu Arg Ser Arg Asp Thr Lys Ile Glu Val Ile Gln Leu 100 105 110 .

Val Lys Asn Leu Leu Thr Tyr Val Arg Gly Val Tyr Arg His Gly Asn 115 120 125

Phe Arg 130

<210> 101

<211> 1269

<212> DNA

<213> Canis familiaris

<400> 101

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gccccaggat cccagtgagg tagcagaatt ttacacacag tgcttattcc cagggactct 360 ctaaacccga gtcactgggc ccccagctcc aagccactcc ctgtccccag cacaaacaaa 420 gacacttgtt taaataacac acaataataa ataaggctaa gaagaaacat gtctgtgcca 480 ctcccaggta cagcaagacc ccctcccaca catatctgcc tccactgtaa tgctgcactt 540 tgctctgagg aggggacagt catgggatgc agtgctttcc ctcagcgttg atgaagtgca 600 gacggaggag ggccacccgg ctgggcccca tgcaccaagg caggggtggc tgggctcaqc 660 tecatggagg caggeggtge aggetgaggt eccagetgag gaaatggtte teceeecee 720 ccacctccct aagaaatttg tgacgtcgga aagaaaaatg aatctggaac ttaagtggtc 780 aggtctgggt ctacagataa ggatgctaag ttttcatgct tcatctgaaa tttccatggc 840 gataaactcc ccttacatag gtgagcaggt ttttcaccaa ctggatcact tcaattttgg 900 tgtctcggct gcgttcactg gaaatccctg ccgcgggctt ttgagagcac agtgctttca 960 geatectetg ggteetttgg atggegetge agteggagae attgateaga gattetagag 1020 ctgcgcagta catgccggcg gtcaggttga cgctccacac catgctgccg ttgcagaggg 1080 atgectgatt ctgggtgatg ttgaccaget ceteaatgag etecttgagg gttggggagg 1140 gagtcacagg gctcggggag gcaaggccac cgaggcaggt gagagcaatg accacagtca 1200 accagagege catggagece agagecaatg caggaggage gagggaagag caggeaggte 1260 1269 gtaggctgg

<400> 102

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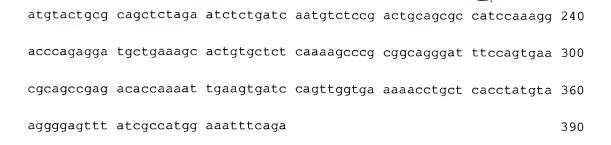


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<211> 390

<212> DNA

<213> Canis familiaris



<211> 390

<212> DNA

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<400> 103

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<211> 330

<212> DNA

<213> Canis familiaris

<220>

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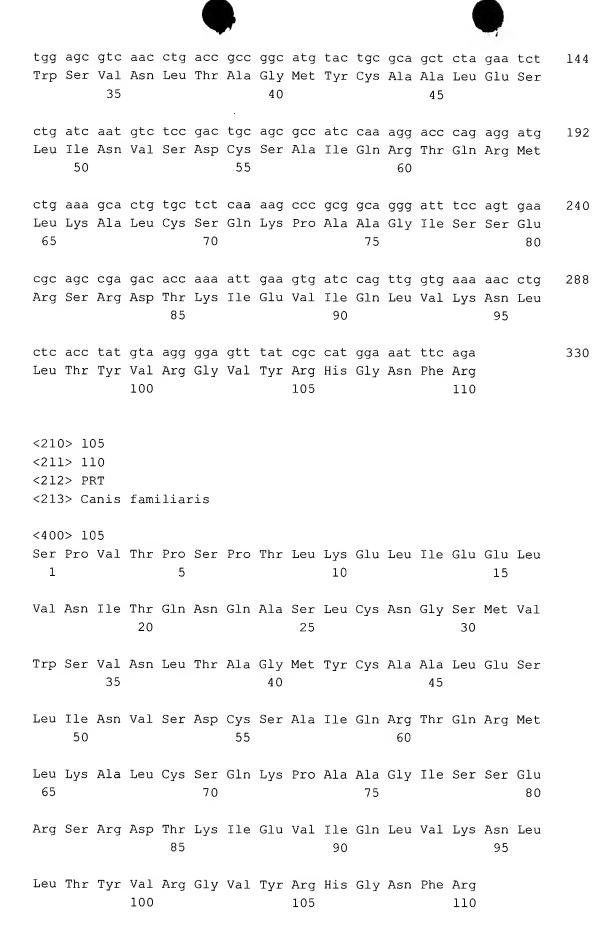
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<400> 104

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gtc aac atc acc cag aat cag gca tcc ctc tgc aac ggc agc atg gtg 96
Val Asn Ile Thr Gln Asn Gln Ala Ser Leu Cys Asn Gly Ser Met Val
20 25 30







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60

240

gtg ttt ggt gga gac cag tcc cac aag gcc caa gcc ctc tcg gtg gtg

Val Phe Gly Gly Asp Gln Ser His Lys Ala Gln Ala Leu Ser Val Val

65 75 80 cac gtg acg aac cag aag atc ttc cac ttc ttc tgc aca gag gcg tcc His Val Thr Asn Gln Lys Ile Phe His Phe Phe Cys Thr Glu Ala Ser 85 90 tcg tct gct tgg aac acc ctc ctg gag gaa ttc tgc acg gga 336 Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly 105 ctt gat tgg cag ctg acc cgc ctg gaa gcc tgt gtc atg cag gag gtg 384 Leu Asp Trp Gln Leu Thr Arg Leu Glu Ala Cys Val Met Gln Glu Val 115 120 125 ggg gag gga gag gct ccc ctc acg aac gag gac tcc atc ctg aqq aac 432 Gly Glu Gly Glu Ala Pro Leu Thr Asn Glu Asp Ser Ile Leu Arg Asn 130 135 140 tac ttc caa aga ctc tcc ctc tac ctg caa gag aag aaa tac agc cct Tyr Phe Gln Arg Leu Ser Leu Tyr Leu Gln Glu Lys Lys Tyr Ser Pro 145 150 155 160 tgt gcc tgg gag atc gtc aga gca gaa atc atg aga tcc ttg tat tat 528 Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr 165 170 175 tca tca aca gcc ttg cag aaa aga tta agg agc gag aaa 567 Ser Ser Thr Ala Leu Gln Lys Arg Leu Arg Ser Glu Lys 180 185 <210> 108 <211> 189 <212> PRT <213> Felis catus <400> 108 Met Ala Leu Pro Ser Ser Phe Leu Val Ala Leu Val Ala Leu Gly Cys 1 5 15 Asn Ser Val Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Gly Leu 20 25 30 Leu Asn Arg Arg Ala Leu Thr Leu Leu Gly Gln Met Arg Arg Leu Pro



45

55

40

Ala Ser Ser Cys Gln Lys Asp Arg Asn Asp Phe Ala Phe Pro Gln Asp

35

Val Phe Gly Gly Asp Gln Ser His Lys Ala Gln Ala Leu Ser Val Val 65 70 75 80

His Val Thr Asn Gln Lys Ile Phe His Phe Phe Cys Thr Glu Ala Ser
85 90 95

Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly
100 105 110

Leu Asp Trp Gln Leu Thr Arg Leu Glu Ala Cys Val Met Gln Glu Val
115 120 125

Gly Glu Gly Glu Ala Pro Leu Thr Asn Glu Asp Ser Ile Leu Arg Asn 130 135 140

Tyr Phe Gln Arg Leu Ser Leu Tyr Leu Gln Glu Lys Lys Tyr Ser Pro 145 150 155 160

Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr 165 170 175

Ser Ser Thr Ala Leu Gln Lys Arg Leu Arg Ser Glu Lys 180 185

<210> 109

<211> 567

<212> DNA

<213> Felis catus

<400> 109

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gagtctttgg aagtagttcc tcaggatgga gtcctcgttc gtgaggggag cctctccctc 180

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gtggaagatc ttctggttcg tcacgtgcac caccgagagg gcttgggcct tgtgggactg 360

gtctccacca aacacgtcct gggggaaggc gaagtcattt ctgtccttct gacaggagct 420

ggcagggagt ctcctcattt gtcccaggag cgtcaaggcc ctcctgttca gcaggccgtg 480





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567

< 21	Λ>	1	10

<211> 567

<212> DNA

<213> Felis catus

<220>

<221> CDS

<222> (1)..(567)

<400> 110

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ctg aac agg agg gcc ttg acg ctc ctg gga caa atg agg aga ctc cct 144 Leu Asn Arg Arg Ala Leu Thr Leu Leu Gly Gln Met Arg Arg Leu Pro 35 40

gcc agc tcc tgt cag aag gac agg aat gac ttc gcc ttc ccc cag gac 192 Ala Ser Ser Cys Gln Lys Asp Arg Asn Asp Phe Ala Phe Pro Gln Asp 50 -55

gtg ttc ggt gga gac cag tcc cac aag gct caa gcc ctc tcg gtg gtg 240 Val Phe Gly Gly Asp Gln Ser His Lys Ala Gln Ala Leu Ser Val Val 65 70 75

cac gtg acg aac cag gag atc ttc cac ttc ttc tgc aca gag gcg tcc His Val Thr Asn Gln Glu Ile Phe His Phe Phe Cys Thr Glu Ala Ser 90 85

tcg tct gct tgg aac acc acc ctc ctg gag gaa ttc tgc acg gga 336 Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly 100 105 110

ctt gat cgg cag ctg acc cgc ctg gaa gcc tgt gtc gtg cag gag gtg 384 Leu Asp Arg Gln Leu Thr Arg Leu Glu Ala Cys Val Val Gln Glu Val 115 120 125

ggg gag gga gag gct ccc ctc acq aac gag gac tcc ctc ctg aqq aac 432





tac ttc caa aga ctc tcc ctc tac ctg caa gag aag aaa tac agc cct 480
Tyr Phe Gln Arg Leu Ser Leu Tyr Leu Gln Glu Lys Lys Tyr Ser Pro
145 150 155 160

tgt gcc tgg gag atc gtc aga gca gaa atc atg aga tcc ttg tat tat 528 Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr 165 170 175

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<210> 111 <211> 189

<212> PRT

<213> Felis catus

<400> 111

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20 25 30

Leu Asn Arg Arg Ala Leu Thr Leu Leu Gly Gln Met Arg Arg Leu Pro \$35\$ 40 45

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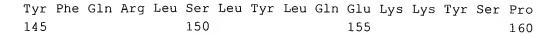
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Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly
100 105 110

Leu Asp Arg Gln Leu Thr Arg Leu Glu Ala Cys Val Val Gln Glu Val
115 120 125

Gly Glu Gly Glu Ala Pro Leu Thr Asn Glu Asp Ser Leu Leu Arg Asn 130 135 140





Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr 165 170 175

Ser Ser Thr Ala Leu Gln Lys Arg Leu Arg Ser Glu Lys 180 185

<210> 112

<211> 567

<212> DNA

<213> Felis catus

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ccccacctcc tgcacgacac aggcttccag gcgggtcagc tgccgatcaa gtcccgtgca 240

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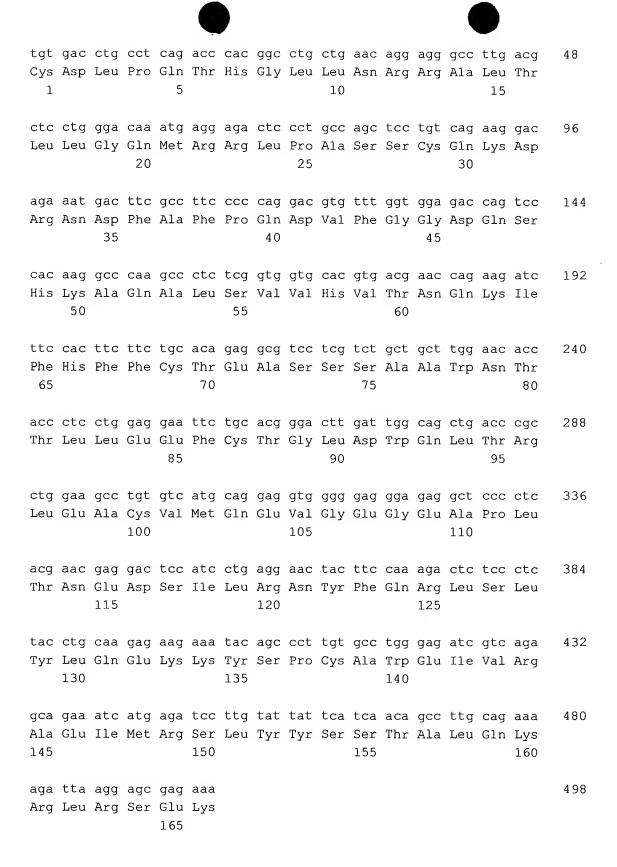
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His Lys Ala Gln Ala Leu Ser Val Val His Val Thr Asn Gln Lys Ile 50 55 60

Phe His Phe Phe Cys Thr Glu Ala Ser Ser Ser Ala Ala Trp Asn Thr 65 70 75 80

Thr Leu Leu Glu Glu Phe Cys Thr Gly Leu Asp Trp Gln Leu Thr Arg 85 90 95

Leu Glu Ala Cys Val Met Gln Glu Val Gly Glu Gly Glu Ala Pro Leu
100 105 110

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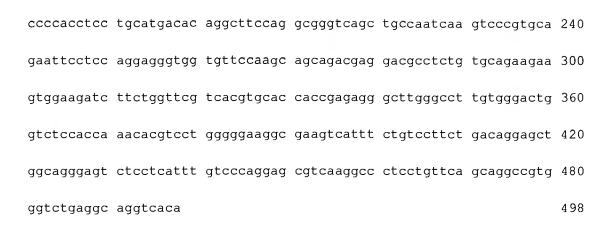
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agg aat gac ttc gcc ttc ccc cag gac gtg ttc ggt gga gac cag tcc 144 Arg Asn Asp Phe Ala Phe Pro Gln Asp Val Phe Gly Gly Asp Gln Ser 35 40 45

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His Lys Ala Gln Ala Leu Ser Val Val His Val Thr Asn Gln Glu Ile
50 55 60

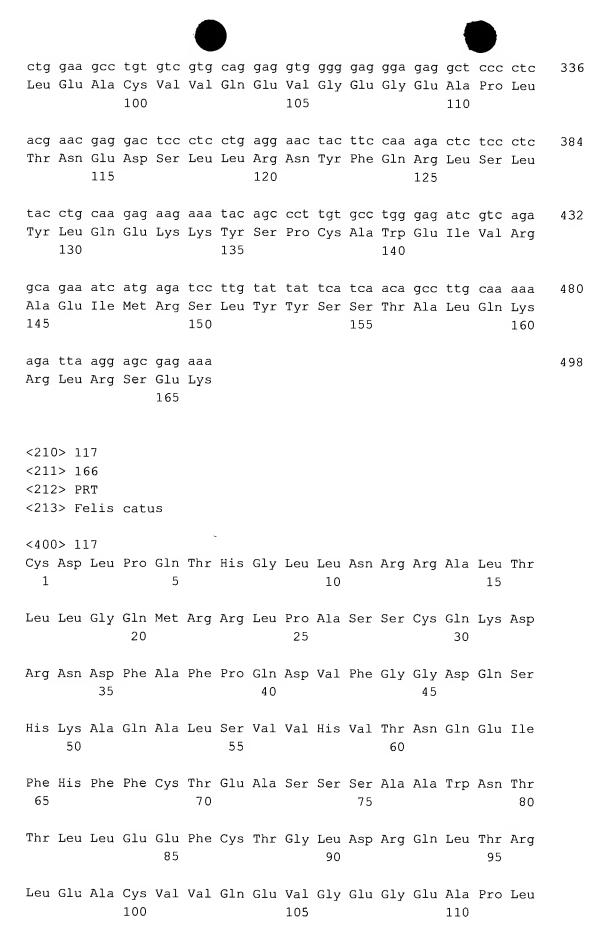
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acc ctc ctg gag gaa ttc tgc acg gga ctt gat cgg cag ctg acc cgc 288

Thr Leu Leu Glu Glu Phe Cys Thr Gly Leu Asp Arg Gln Leu Thr Arg

85 90 95











Thr Asn Glu Asp Ser Leu Leu Arg Asn Tyr Phe Gln Arg Leu Ser Leu 115 120 125

Tyr Leu Gln Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Ile Val Arg 130 135 140

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Ile Thr Ala Val Met Asn Glu Ala Val Glu Val Val Ser Glu Met Phe 50 55 60

Asp Pro Glu Glu Pro Lys Cys Leu Gln Thr His Leu Lys Leu Tyr Glu 65 70 75 80

Gln Gly Leu Arg Gly Ser Leu Ile Ser Leu Lys Glu Pro Leu Arg Met 85 90 95

Met Ala Asn His Tyr Lys Gln His Cys Pro Leu Thr Pro Glu Thr Pro 100 105 110

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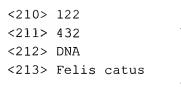
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					ctc Leu 70				_			_	-	_	_	240
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Thr Ala Val Met Asn Glu Ala Val Glu Val Val Ser Glu Met Phe Asp 35 40 45

Pro Glu Glu Pro Lys Cys Leu Gln Thr His Leu Lys Leu Tyr Glu Gln 50 55 60

Gly Leu Arg Gly Ser Leu Ile Ser Leu Lys Glu Pro Leu Arg Met Met
65 70 75 80

Ala Asn His Tyr Lys Gln His Cys Pro Leu Thr Pro Glu Thr Pro Cys
85 90 95

Glu Thr Gln Thr Ile Thr Phe Lys Asn Phe Lys Glu Asn Leu Lys Asp 100 105 110

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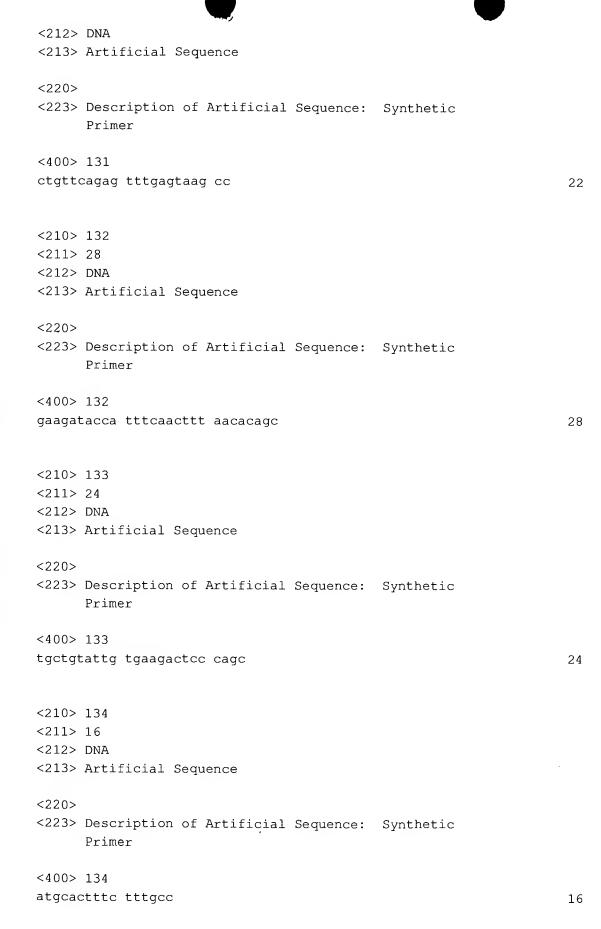
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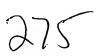
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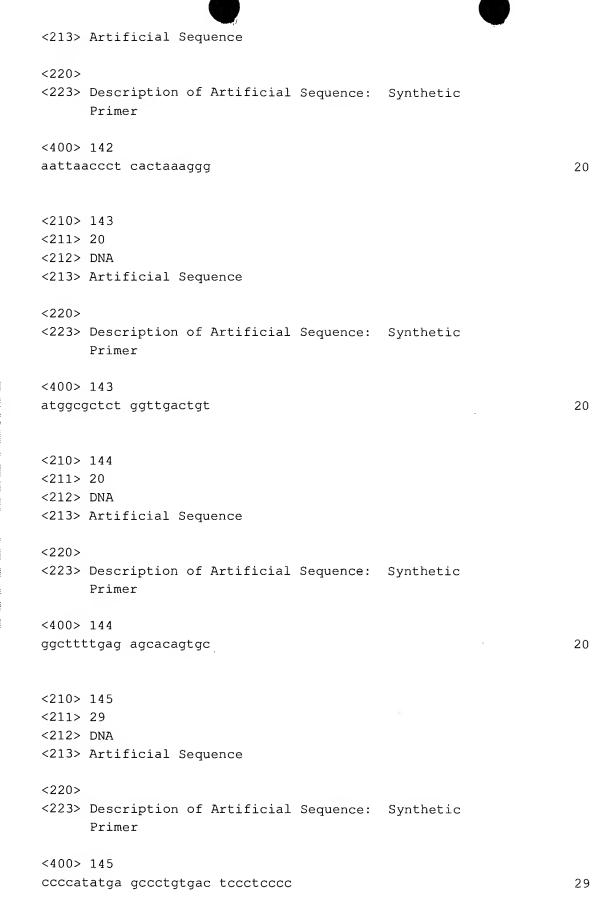




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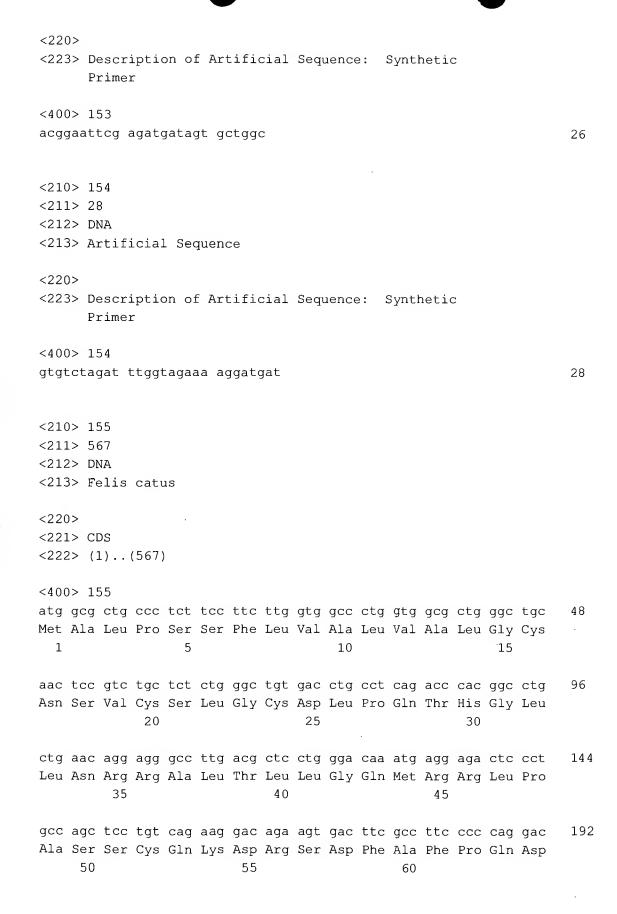


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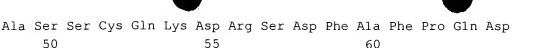




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				gag Glu										_			432
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Leu Asn Arg Arg Ala Leu Thr Leu Leu Gly Gln Met Arg Arg Leu Pro



Val Phe Gly Gly Asp Gln Ser His Lys Ala Gln Ala Leu Ser Val Val 70 75

His Val Thr Asn Gln Lys Ile Phe His Phe Phe Cys Thr Glu Ala Ser 85 90

Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly 105 100 110

Leu Asp Trp Gln Leu Thr Arg Leu Glu Ala Cys Val Met Gln Glu Val 115 120 125

Gly Glu Gly Glu Ala Pro Leu Thr Asn Glu Asp Ser Ile Leu Arg Asn 130 135 140

Tyr Phe Gln Arg Leu Ser Leu Tyr Leu Gln Glu Lys Lys Tyr Ser Pro 145 150 155

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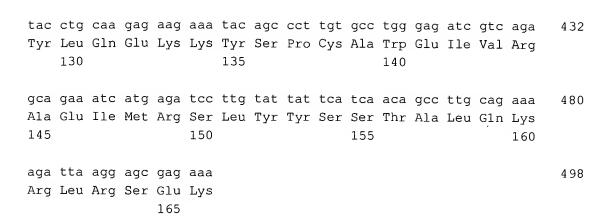
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65					70					75					80	

acc	ctc	ctg	gag	gaa	ttc	tgc	acg	gga	ctt	gat	tgg	cag	ctg	acc	cgc	288
Thr	Leu	Leu	Glu	Glu	Phe	Cys	Thr	Gly	Leu	Asp	Trp	Gln	Leu	Thr	Arg	
				85					90					95		

ctg	gaa	gcc	tgt	gtc	atg	cag	gag	gtg	ggg	gag	gga	gag	gct	ccc	ctc	336
Leu	Glu	Ala	Cys	Val	Met	Gln	Glu	Val	Gly	Glu	Gly	Glu	Ala	Pro	Leu	
			100					105					110			

acg	aac	gag	gac	tcc	atc	ctg	agg	aac	tac	ttc	caa	aga	ctc	tcc	ctc	384
Thr	Asn	Glu	Asp	Ser	Ile	Leu	Arg	Asn	Tyr	Phe	Gln	Arg	Leu	Ser	Leu	
		115					120					125				





<210> 159 <211> 166 <212> PRT <213> Felis catus

<400> 159

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Leu Leu Gly Gln Met Arg Arg Leu Pro Ala Ser Ser Cys Gln Lys Asp 20 25 30

Arg Ser Asp Phe Ala Phe Pro Gln Asp Val Phe Gly Gly Asp Gln Ser 35 40 45

His Lys Ala Gln Ala Leu Ser Val Val His Val Thr Asn Gln Lys Ile 50 55 60

Phe His Phe Phe Cys Thr Glu Ala Ser Ser Ser Ala Ala Trp Asn Thr 65 70 75 80

Thr Leu Leu Glu Glu Phe Cys Thr Gly Leu Asp Trp Gln Leu Thr Arg
85 90 95

Leu Glu Ala Cys Val Met Gln Glu Val Gly Glu Gly Glu Ala Pro Leu
100 105 110

Thr Asn Glu Asp Ser Ile Leu Arg Asn Tyr Phe Gln Arg Leu Ser Leu 115 120 125

Tyr Leu Gln Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Ile Val Arg 130 135 140

Ala Glu Ile Met Arg Ser Leu Tyr Tyr Ser Ser Thr Ala Leu Gln Lys

145 150 155 160

Arg Leu Arg Ser Glu Lys 165

<210> 160

<211> 498

<212> DNA

<213> Felis catus

<400> 160

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gaatteetee aggagggtgg tgtteeaage ageagaegag gaegeetetg tgeagaagaa 300
gtggaagate ttetggtteg teaegtgeae eacegagagg gettgggeet tgtgggaetg 360
gteteeacea aacaegteet gggggaagge gaagteaett etgteettet gaeaggaget 420
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<210> 161

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<212> DNA

<213> Felis catus

<220>

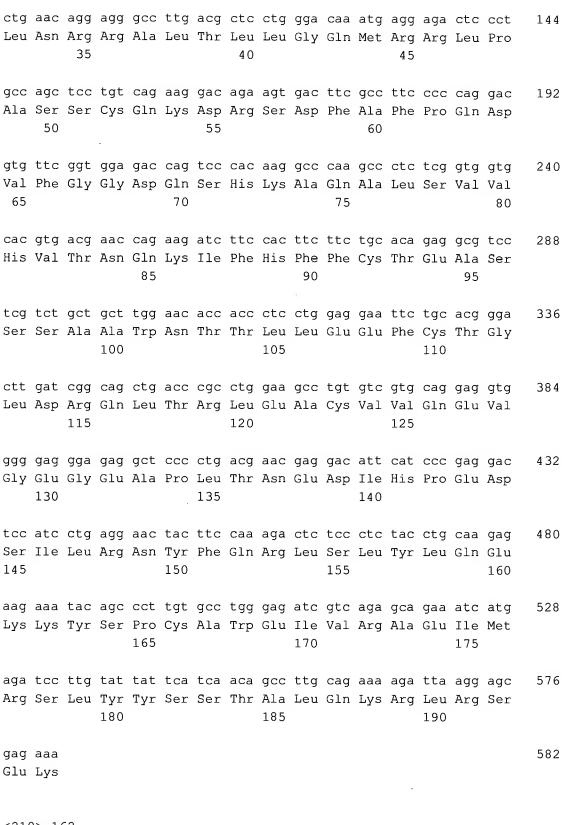
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<222> (1)..(582)

<400> 161

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<210> 162 <211> 194

<212> PRT





<400> 162

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1 10 15

Asn Ser Val Cys Ser Leu Gly Cys Asp Leu Pro Gln Thr His Gly Leu 20 25 30

Leu Asn Arg Arg Ala Leu Thr Leu Leu Gly Gln Met Arg Arg Leu Pro 35 40 45

Ala Ser Ser Cys Gln Lys Asp Arg Ser Asp Phe Ala Phe Pro Gln Asp 50 55 60

Val Phe Gly Gly Asp Gln Ser His Lys Ala Gln Ala Leu Ser Val Val 65 70 75 80

His Val Thr Asn Gln Lys Ile Phe His Phe Phe Cys Thr Glu Ala Ser 85 90 95

Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly
100 105 110

Leu Asp Arg Gln Leu Thr Arg Leu Glu Ala Cys Val Val Gln Glu Val
115 120 125

Gly Glu Gly Glu Ala Pro Leu Thr Asn Glu Asp Ile His Pro Glu Asp 130 135 140

Lys Lys Tyr Ser Pro Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met 165 170 175

Arg Ser Leu Tyr Tyr Ser Ser Thr Ala Leu Gln Lys Arg Leu Arg Ser · 180 185 190

Glu Lys

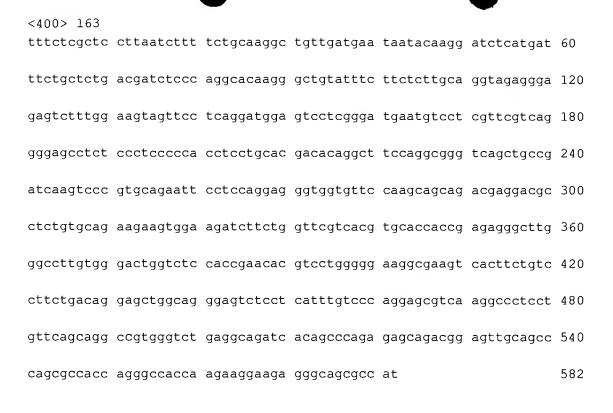
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<211> 582

<212> DNA

<213> Felis catus





<210> 164 <211> 513 <212> DNA <213> Felis catus

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<400> 164

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ctc ctg gga caa atg agg aga ctc cct gcc agc tcc tgt cag aag gac 96 Leu Leu Gly Gln Met Arg Arg Leu Pro Ala Ser Ser Cys Gln Lys Asp 20 25 30

aga agt gac ttc gcc ttc ccc cag gac gtg ttc ggt gga gac cag tcc 144

Arg Ser Asp Phe Ala Phe Pro Gln Asp Val Phe Gly Gly Asp Gln Ser

35 40 45

cac aag gcc caa gcc ctc tcg gtg gtg cac gtg acg aac cag aag atc 192
His Lys Ala Gln Ala Leu Ser Val Val His Val Thr Asn Gln Lys Ile
50 55 60







					tgc Cys												240
	acc			_	gaa Glu 85	ttc		-			gat		_	_		cgc	288
					gtc Val												336
	_			_	att Ile				_			_					384
		-			ctc Leu		-						-				432
				_	aga Arg	-	_		_			_					480
		_	_	_	aaa Lys 165	_			_								513
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)> 16															
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	Leu	Leu	Gly	Gln 20	Met	Arg	Arg	Leu	Pro 25	Ala	Ser	Ser	Cys	Gln 30	Lys	Asp	
	Arg	Ser	Asp 35	Phe	Ala	Phe	Pro	Gln 40	Asp	Val	Phe	Gly	Gly 45	Asp	Gln	Ser	
	His	Lys 50	Ala	Gln	Ala	Leu	Ser 55	Val	Val	His	Val	Thr 60	Asn	Gln	Lys	Ile	

Phe His Phe Phe Cys Thr Glu Ala Ser Ser Ser Ala Ala Trp Asn Thr



Leu
Thr
Gln
Trp
145
Thr

Thr Leu Leu Glu Glu Phe Cys Thr Gly Leu Asp Arg Gln Leu Thr Arg 85 90 95

Leu Glu Ala Cys Val Val Gln Glu Val Gly Glu Gly Glu Ala Pro Leu 100 105 110

Thr Asn Glu Asp Ile His Pro Glu Asp Ser Ile Leu Arg Asn Tyr Phe 115 120 125

Gln Arg Leu Ser Leu Tyr Leu Gln Glu Lys Lys Tyr Ser Pro Cys Ala 130 135 140

Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr Ser Ser 145 150 155 160

Thr Ala Leu Gln Lys Arg Leu Arg Ser Glu Lys 165 170

<210> 166

<211> 513

<212> DNA

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 <213> Felis catus

<400> 166

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gagtctttgg aagtagttcc tcaggatgga gtcctcggga tgaatgtcct cgttcgtcag 180

gggagcctct ccctccccca cctcctgcac gacacaggct tccaggcggg tcagctgccg 240

atcaagtccc gtgcagaatt cctccaggag ggtggtgttc caagcagcag acgaggacgc 300

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ggccttgtgg gactggtctc caccgaacac gtcctggggg aaggcgaagt cacttctgtc 420

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<211> 567

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tgt gcc tgg gag atc gtc aga gca gaa atc atg aga tcc ttg tat tat 528 Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr 165 170 175

tca tca aca gcc ttg cag aaa aga tta agg agc gag aaa 567 Ser Ser Thr Ala Leu Gln Lys Arg Leu Arg Ser Glu Lys 180 185

<210> 168

<211> 189

<212> PRT

<213> Felis catus

<400> 168

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Leu Asn Arg Arg Ala Leu Thr Leu Leu Gly Gln Met Arg Arg Leu Pro
35 40 45

Ala Ser Ser Cys Gln Lys Asp Arg Asn Asp Phe Ala Phe Pro Gln Asp 50 55 60

Val Phe Gly Gly Asp Gln Ser His Lys Ala Gln Ala Leu Ser Val Val 65 70 75 80

His Val Thr Asn Gln Lys Ile Phe His Phe Phe Cys Thr Glu Ala Ser 85 90 95

Ser Ser Ala Ala Trp Asn Thr Thr Leu Leu Glu Glu Phe Cys Thr Gly
100 105 110

Leu Asp Arg Gln Leu Thr Arg Leu Glu Ala Cys Val Val Gln Glu Val
115 120 125

Gly Glu Gly Glu Ala Pro Leu Thr Asn Glu Asp Ser Ile Leu Arg Asn 130 135 140

Tyr Phe Gln Arg Leu Ser Leu Tyr Leu Gln Glu Lys Lys Tyr Ser Pro 145 150 155 160

Cys Ala Trp Glu Ile Val Arg Ala Glu Ile Met Arg Ser Leu Tyr Tyr 165 170 175





Ser Ser Thr Ala Leu Gln Lys Arg Leu Arg Ser Glu Lys 180 185

<210> 169

<211> 567

<212> DNA

<213> Felis catus

<400> 169

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ceecacetee tgeacgacae aggetteeag gegggteage tgeegateaa gteeegtgea 240

gaatteetee aggagggtgg tgtteeaage ageagaegag gaegeetetg tgeagaagaa 300

gtggaagate ttetggtteg teaegtgeae eacegagag gettgggeet tgtgggaetg 360

gteteeaceg aacacgteet gggggaagge gaagteatt etgteettet ggeaggaget 420

ggeagggagt eteeteatt gteeeaggag egteaaggee eteetgtea geaggeegtg 480

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<210> 170

<211> 498

<212> DNA

<213> Felis catus

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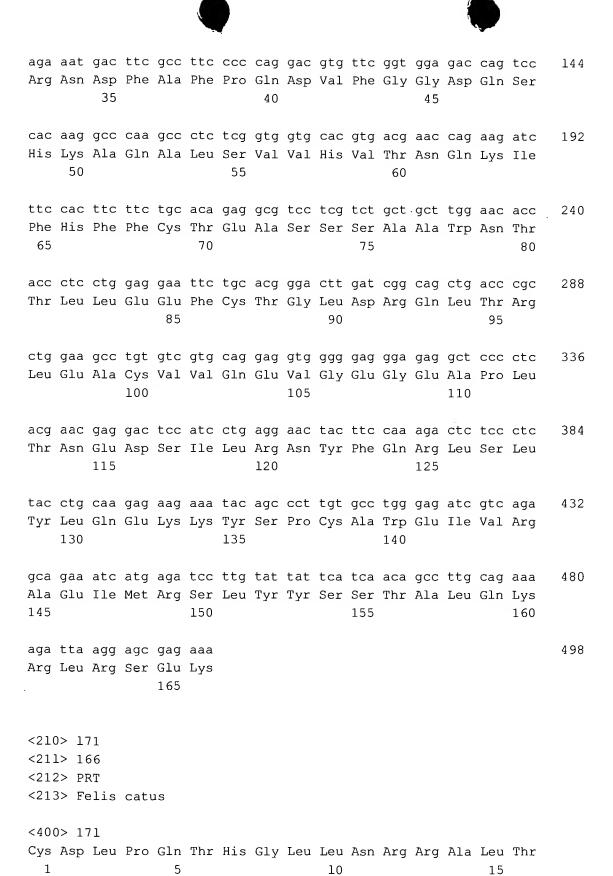
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<222> (1)..(498)

<400> 170

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Leu Leu Gly Gln Met Arg Arg Leu Pro Ala Ser Ser Cys Gln Lys Asp

20 25 30

Arg Asn Asp Phe Ala Phe Pro Gln Asp Val Phe Gly Gly Asp Gln Ser 35 40 45

His Lys Ala Gln Ala Leu Ser Val Val His Val Thr Asn Gln Lys Ile
50 55 60

Phe His Phe Cys Thr Glu Ala Ser Ser Ser Ala Ala Trp Asn Thr 65 70 75 80

Thr Leu Leu Glu Glu Phe Cys Thr Gly Leu Asp Arg Gln Leu Thr Arg 85 90 95

Leu Glu Ala Cys Val Val Gln Glu Val Gly Glu Gly Glu Ala Pro Leu
100 105 110

Thr Asn Glu Asp Ser Ile Leu Arg Asn Tyr Phe Gln Arg Leu Ser Leu 115 120 125

Tyr Leu Gln Glu Lys Lys Tyr Ser Pro Cys Ala Trp Glu Ile Val Arg 130 135 140

Arg Leu Arg Ser Glu Lys 165

<210> 172

<211> 498

<212> DNA

<213> Felis catus

<400> 172

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gagtctttgg aagtagttcc tcaggatgga gtcctcgttc gtgaggggag cctctccctc 180

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gaattcctcc aggagggtgg tgttccaagc agcagacgag gacgcctctg tgcagaagaa 300

gtggaagatc ttctggttcg tcacgtgcac caccgagagg gcttgggcct tgtgggactg 360



